

STORONKIN, A.V.; DOBROTIN, R.B.

Basic contents of D.I. Mendeleev's teaching about solutions. Vop.
1st. est. i tekhn. no.3:14-23 '57. (MIRA 11:1)
(Solution (Chemistry))
(Mendeleev, Dmitrii Ivanovich, 1834-1907)

MARKUZIN, N.P. STORONKIN, A.V.

Investigation of ternary demixing solutions of triethylamine-
phenol-water. Vest. LOU 12 no. 10: 123-147 '57. (MLA 10:8)
(Systems (Chemistry))

STORONKIN, A.V.

In regard to the article of V.IA. Anosov and N.N. Patsukova.
Zhur. neorg. khim. 2 no.11:2682-2684 N '57. (MIRA 11:3)

1. Leningradskiy gosudarstvennyy universitet im. A.A. Zhdanova.
(Salts, Double) (Fusion)

AUTHOR: Storoshin, A. V., Simanovich, L. E. 54-4-13/20
 TITLE: Investigation of the Three-Componental Equilibrium in the System Calcium-Chloride - Methanol - Water (Issledovaniye trekhfaznogo ravnovesiya v sisteme khloristyy kal'tsiy - metilovyy spirt - voda)
 PERIODICAL: Vestnik Leningradskogo Universiteta Seriya Fiziki i Khimii, 1957, Vol. 22, Nr 4, pp. 103-119 (USSR)
 ABSTRACT: The study of the solubility, as well as of the partial vapour pressure of the transient components in the above cited system and the connection between the different thermodynamic quantities are the aim of the submitted work. The experiments were carried out according to common methods gravimetrically as well as volumetrically at $25 \pm 0.02^\circ\text{C}$ and 15° and 20°C . The results were achieved at limits of error of $\pm 0.15\%$ (per weight) for calciumchloride and water, and of $\pm 0.25\%$ (per weight) for methanol. The experimental results and those derived from the thermodynamic theory for the heterogenous three-componental systems regarding the form of the solubility - isothermal-lines and curves of the total and the partial vapour

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Investigation of the Three-Componental Equilibrium in the
System Calcium-Chloride - Methanol - Water

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pressure correspond quantitatively and qualitatively. The changes of the chemical potential (and accordingly also of the partial-pressure) of the water and of the methanol along the isothermal lines ($\text{CaCl}_2 \cdot 2\text{CH}_3\text{OH}$; $\text{CaCl}_2 \cdot 4\text{CH}_3\text{OH}$; $\text{CaCl}_2 \cdot 6\text{H}_2\text{O}$; $\text{CaCl}_2 \cdot 6\text{H}_2\text{O}$) are stated. Theoretical statements are given for: The change of the total vapour pressure along the solubility isothermal line for 25°C , the process of the open isothermal evaporation of saturated solutions, the course of the curve of the extremum vapour pressure and of the temperature with saturated solutions in the three-phase system, as well as for some correlations of various thermodynamic quantities as regards the four-phase equilibrium in the three-componental system (two salts - two solvents). There are 8 figures, 2 tables, and 14 references, 12 of which are Slavic.

SUBMITTED: May 7, 1957

AVAILABLE: Library of Congress

Card 2/2

Journal of Physical Chemistry

Vol XXXI, Nr 1, 1957

ON THE RELATION BETWEEN CHANGES IN TEMPERATURE, PRESSURE
AND THE COMPOSITION OF BINARY AZEOTROPES

A. F. Slonovskii and A. G. Morozhinskii (Leningrad)

Summary

The previously known thermodynamic equation connecting the changes in temperature, pressure and composition of binary azeotropic mixtures has been reduced to a simpler form, more convenient for practical use. Based on the derived equation the factors have been indicated determining the influence of the temperature on the azeotrope composition. The results are presented of an experimental investigation of the shift in azeotrope composition under changes in temperature and in pressure (over the range 100–700 mm Hg) for the systems benzene–cyclohexane, benzene–isopropyl alcohol, benzene–n-propylalcohol, benzene–isobutyl alcohol, cyclohexane–ethyl alcohol, cyclohexane–isopropyl alcohol, cyclohexane–n-propyl alcohol and cyclohexane–ethyl acetate. The experimental results have been discussed in the light of the derived equation.

TOCHILIN, A.V. (Leningrad); KONACHEVSKIY, A.G. (Leningrad);
KUDRYATSEVA, I.S. (Leningrad).

The effect of temperature and pressure on the composition of
ternary azetropes [with summary in English]. Zhur.fiz.khim. 51
no.2:395-400, 1972. (RUSS 1:9)

L. Leningradskiy gosudarstvennyy universitet im. A.A. Zhdanova.
(Isotopes)

AUTHORS: Steronkin, A. V., Markuzin, N. P.

54-1-10/17

TITLE: Investigation of the Equilibrium Liquid - Vapor in the
System $(C_2H_5)_3N - H_2O$
(Issledovaniye ravnovesiya zhidkost' - par v sisteme
 $(C_2H_5)_3N - H_2O$)

PERIODICAL: Vestnik Leningradskogo Universiteta. Seriya Fizika
i Khimiya (Nr 1), 1958, Nr 4,

ABSTRACT: Voluminous experimental material has recently been collected concerning the formation of compounds in vapors of different systems. (Ref. 1-4) If, however, the formation of compounds in the computation of partial pressure is not taken into account, wrong results are frequently obtained. These errors become particularly noticeable if determination of partial pressure is carried out by the method of the inert gas jet. The existence of compounds and vapors can be ascertained by comparing the results obtained by determining general vapor pressure, by the method of the inert gas jet (P) and the static (P) pressure. In this case the quantity

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System $(C_2H_5)_3N - H_2O$

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$$P' = \sum_{i=1}^n P_i'$$

is not equal to the actual significance of general gas pressure and will differ from the quantity P . This method based upon interaction in vapors was described with particular thoroughness in the papers by Simons and Gil'denbrand (Ref. 4), Kherstam (Ref. 5) Fisher (Ref. 6) and Verrevskiy with his collaborators (Refs. 7-10). The association of the molecules of one and the same component was thoroughly investigated. Quantities of general and partial gas pressure solutions of triethylamine in water are estimated by the method of the inert gas jet and by the static method at temperatures of 150 and 350°C. By comparing the data for general gas pressure obtained by the above mentioned methods it was found that in vapors of the

$(C_2H_5)_3N - H_2O$ - system a combination of

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triethylamine and water, and at 15°C an association of triethylamine molecules takes place. The method of calculating real values of partial pressures of components is described for cases where combinations formed in the gaseous phase are known. The most authentic values of partial pressures for the $(C_2H_5)_3N - H_2O$ -system at 15° and 35° C.

There are 4 figures, 7 tables, and 16 references, 6 of which are Slavic.

SUBMITTED: April 11, 1957

AVAILABLE: Library of Congress

1. Vapor-Compounds 2. Vapor pressure 3. Theoretical analysis

Card 1/3

AUTHORS: Storozhenko, A.Y. Korotkiy, A.G. Belousov, V.I. 54-10-2-9/16

TITLE: The Effect of Temperature on the Composition of Binary Heteroazeotropes (O vliyanií temperatury na sostav binarnykh geteroazeotropov)

PERIODICAL: Vestnik Leningradskogo Universiteta. Seriya fiziki i khimii 1952, Vol. 10 Nr. 2, pp. 94-100 (USSR)

ABSTRACT: This paper deals with general equations which determine the changes in the composition of binary heteroazeotropes in the case of a change of temperature, and the correlation between the change of composition and the shape of the curve of the reciprocal solubility of the liquids is discussed. It is obvious that the question relating to the influence exercised by temperature upon the composition of the binary heteroazeotropes is identical with that of the influence of temperature upon the vapor composition of the binary stratifying solution. Therefore, this problem is best solved by means of equations which express the equilibrium of the three-phase systems (Ref 5). On the basis of the equation:

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Composition of Binary Heteroazeotropes

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$$\frac{dx^{(3)}}{dT} = \frac{q_{31} - q_{32}}{\left(\frac{\partial q}{\partial x^2}\right)_{P,T} (x^{(2)} - x^{(1)})} = \frac{q_{31} - q_{32}}{T \left(\frac{\partial q}{\partial x^2}\right)_{P,T} (x^{(2)} - x^{(1)})}$$

the following conclusion may be drawn: If temperature rises, content of components in the binary heteroazeotrope increases which shows high concentration in that liquid layer during the condensation of which the greatest amount of heat is separated. This layer has a high differential molar evaporation temperature, and therefore the formulation given cannot be circumscribed accordingly. The problem of the influence exercised by temperature upon the change of composition of the binary heteroazeotrope can also be solved by another method, which also offers certain advantages. Let it be assumed that the partial molar temperature of the evaporation of one of the components is higher in all compositions of the solutions than that of others. A - component with higher evaporation temperature, L_A - its evaporation temperature, x_A - molar part. In view of such a condition it is possible to name 4 variants of the dependence of the reciprocal solubility of the

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components upon temperature:

- 1.) With rising temperature reciprocal solubility increases:
The A-component content increases in the layer with the lowest A-content.
- 2.) With rising temperature reciprocal solubility diminishes;
the A-component content increases in the layer having the highest A-content.
- 3.) With rising temperature the content of A in both layers increases.
- 4.) With rising temperature the content of A in both layers diminishes.

These variants of the solubility curves are shown (fig.2). It is possible that such systems exist in which the correlation of the partial molar temperature of the evaporation of components will be different in different layers; thus, for one layer it may be $L_A > L_B$, and for the other $L_B > L_A$. However, for such cases,

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which are apparently very rare, it is practically of no interest

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to connect the change of heteroazeotropic composition with the temperature values of the evaporation of components, though discussions, such as the one mentioned above, are, of course, possible also in this case. There are 2 figures, and 9 references, 6 of which are Soviet.

SUBMITTED: December 25, 1957

AVAILABLE: Library of Congress

1. Binary heteroazeotropes—Temperature factors—Theory
2. Binary heteroazeotropes—Solubility—Temperature factors

Card 1/1

STORONKIN, A.V.; MORACHEVSKIY, A.G.; BILLOUSOV, V.P.

Effect of temperature on the composition of binary heteroazeotropes
[with summary in English]. Vest. LDU 13 no.10:94-100 '58.
(Systems (Chemistry)) (MIRA 11:6)
(Azeotropy)

AUTHOR: Storozhin, A. V. 76-32-4-35/43

TITLE: Discussion (Diskussiya) On Some Principles and Conceptions of Physicochemical Analysis (O nekotorykh printsipakh i ponyatiyakh fiziko-khimicheskogo analiza) A Reply to V. Ya. Anosov (Otvét V. Ya. Anosovu)

PERIODICAL: Zhurnal Fizicheskoy Khimii. 1958, Vol. 32, Nr 4, pp. 937-942 (USSR)

ABSTRACT: This paper is a reply of the author to the negative answer by V. Ya. Anosov to the critical comment by the author concerning the data and statements by N. S. Kurnakov and successors (Ref 3) on the principle of the continuity and the coincidence of the conceptions of the singular point and the phase. Among other facts the author of this reply maintains that his critical comment is not based on a new conception of the phase but on the generally known situation. The main source of the incorrect explanations by V. Ya. Anosov has to be found in the fact that the qualitative properties of certain compounds are not taken into account; this latter was taken into account not only by the author but also by B. A. Nikitin (Ref 4) for which reason these two obtained the same results. It is not correct, as Anosov maintained, that the conception of continuity can be taken only in one sense, because also the continuity

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Discussion. On Some Principles and Conceptions of Physicochemical Analysis. A Reply to V. Ya. Anosov 76-32-4-35/43

of the character of the function of properties of the corresponding parameters can be assumed and not only the property itself. As concerns the problem which jump is concerned here it is stated that the jump in the character of the function of property of the composition at the transition from solution $A + AB$ to solution $B + AB$, is dealt with, where AB denotes the not dissociated compound; the reason for the incorrect explanation of the singular point has therefore to be seen in the negation of this jump by Kurnakov and Anosov. It is maintained that the determination of the phase conception in heterogeneous systems mentioned in the critical comment does not originate from the author but in principle comes from Gibbs and Van der Waals, and that, besides, it is correct, which is subsequently proved by explanations. Finally explanations of the "translation into mathematical expressions" of some conditions of physicochemical analysis are given. There are 13 references, 12 of which are Soviet.

ASSOCIATION: Leningradskiy gosudarstvennyy universitet im. A. A. Zhdanova
(Leningrad State University imeni A. A. Zhdanov)
SUBMITTED: July 12, 1957
AVAILABLE: Library of Congress
Card 2/2 1. Chemical analysis--Theory

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31. 1. 1952, 10. 1. 1952

07-6-2-1-1939

755

Судебное дело Concerning the Thermodynamic of Multi-Component Heterogeneous Systems (Gibbs'ovye voprosy termodinamiki neodnorodnykh sistem). In: 1937, Vol. 1, No. 1, pp. 1-10. (On the Thermodynamic of Ternary Triphase Systems) (Ob termodinamike ravnovesiya trekhfaznykh sistem trokhkomponentnykh sistem).

[illegible]

...the

A. J. A. J.

In the present paper the influence of pressure, temperature and the composition on the equilibrium of ternary liquid is primarily investigated. Hildebrand (1936) supplied a basis in principle for the methods of solving the problems of thermodynamics in polyphase systems. To derive the equilibrium conditions in the variables pressure, temperature and composition the ternary system is regarded as a binary system with composition. The equilibrium

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Some problems concerning the Thermodynamics of
Multicomponent Heterogeneous Systems. Part I: the Equilibrium Conditions
of Ternary Ternary Systems

of polymer-solvent binary systems is described by the generalized differential Van der Waals (Van-der-Waals', (Ref. 1) equation. Equations are obtained, also, for instance, the differential equation of the solubility in ternary mixtures, the equations for the function of the melting temperature of eutectic ternary mixtures versus the composition, and the differential equation of the rate of evaporation. Not only the conditions of the phase equilibrium are fixed for a full description of the phase behavior of a mixture, but also the possibility of a different phase state has to be taken into account. In a ternary system six types of phase behavior are possible, and these are described by the following conditions of the phase equilibrium: 1) A liquid phase in equilibrium with a solid phase; 2) A liquid phase in equilibrium with a gas phase; 3) A solid phase in equilibrium with a gas phase; 4) A liquid phase in equilibrium with a liquid phase; 5) A solid phase in equilibrium with a liquid phase; 6) A solid phase in equilibrium with a gas phase.

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SOV/76-32-11-9/32

AUTHORS:

Shul'ts, M. M., Stetsenkin, A. V., Markova, T. P.

TITLE:

Investigation of the Chemical Potentials and Activity Coefficients of the Components of Binary Solid Solutions by the Method of the Third Component (Issledovaniye khimicheskikh potentsialov i koeffitsiyentov aktivnosti komponentov binarnykh tverdykh rastvorov metodom tret'yego komponenta)

PERIODICAL:

Zhurnal fizicheskoy khimii, 1958, Vol 32, Nr 11, pp 2518-2524 (USSR)

ABSTRACT:

Although the described method mentioned in the title is not of a general type, it may be employed within a wide field, especially in the investigations of solid solutions formed from salts. The method is indirect and may be regarded as highly thermodynamic. The limits of applicability of this method are given. The principle of the method is based on the determination of the changes of the chemical potentials of the components of the binary solid solution according to the data of the solubility in a liquid solvent (third component) and data on the dependence of the chemical potential on this solvent, as well as on its composition. The solid solution

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SOV/76-32-11-9/32

Investigation of the Chemical Potentials and Activity Coefficients of the
Components of Binary Solid Solutions by the Method of the Third Component:

$K_2SO_4-(NH_4)_2SO_4$ was investigated. The phase composition and the steam pressure of the saturated solutions $K_2SO_4-(NH_4)_2SO_4-H_2O$ were determined at 25°. The solid solutions were synthesized according to a method by V. G. Khlopov et al. (Ref 7). The composition of the solid phases was determined according to a method by Shreynemakers. The measuring results obtained (Table 1) agree well with the data given in publications (Refs 4,5,6). A comparison of the experimental results showed that the solid solutions are richer in sulfate ions than the liquid solutions. From the obtained experimental data the changes of the chemical potential, the activity coefficients of the components and the free energies of the solid solutions $K_2SO_4-(NH_4)_2SO_4$ at 25° were calculated (Table 2). These solid solutions show a deviation from the ideal state (Figs 1,2). This is explained by a relatively greater change of the lattice structure, due to the exchange of the smaller potassium ions by the bigger ammonium ions than it is the case in an exchange of the ammonium ions by K-ions.

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SOV/76-32-11-9/12

Investigation of the Chemical Potentials and Activity Coefficients of the Components of Binary Solid Solutions by the Method of the Third Component

There are 2 figures, 2 tables, and 12 references, 7 of which are Soviet.

ASSOCIATION: Leningradskiy gosudarstvennyy universitet im. A. A. Zhdanova
(Leningrad State University imeni A. A. Zhdanov)

SUBMITTED: April 30, 1957

Card 3/3

Academy of Sciences, USSR, Chemical Sciences Division	
Thermodynamic and Structural Properties of Aqueous Solutions of the	
Conference Held January 27-30, 1978, Moscow, USSR, Issue No. 1534,	
1979, 295 p., 3,000 copies printed.	
M. I. M. I. Shapovalov, Doctor of Chemical Sciences, Ed. of Publishing	
House M. O. Yegorov, Techn. Ed.: T. V. Polyakova.	
FOREWORD: This book is intended for physicists, chemists, and	
chemical engineers.	
CONTENTS: This collection of papers was originally presented at the	
Conference on Thermodynamics and Structure of Solutions sponsored	
by the Section of Chemical Sciences of the Academy of Sciences,	
USSR, and the Department of Chemistry of Moscow State University.	
and held in Moscow, USSR, January 27-30, 1978. Officers of the	
conference are listed in the Foreword. A list of other reports	
presented at the conference, but not included in this book,	
is given. Among the problems treated in this work are:	
electrolytic solutions, viscometric measurement, electro-	
static and thermodynamic properties of various mixtures, spectro-	
scopic analysis, etc. References accompany individual articles.	
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5 (2)

AUTHORS:

Storozkin, A. V., Rusanov, A. I.,
~~Markuzin, N. P.~~

SCV/79-29-B.5/8:

TITLE:

On the Equilibrium "Liquid - Liquid" in Three-component Systems

PERIODICAL:

Zhurnal obshchey khimii, 1959, Vol 29, Nr 8, pp 2460 - 2485
 (USSR)

ABSTRACT:

Many papers have hitherto described the equilibrium between two liquids in ternary systems. However, only few of these papers dealt with the thermodynamic standpoint. The empirical mathematical interrelationships and peculiarities observed in the equilibrium diagrams were in most cases discussed with respect to two liquids in ternary systems without the aid of thermodynamics. The rules set up by Krupatkin (Ref 5) and Tarasenkov are discussed in this connection. In the present paper, the authors attempted to fill this gap and to complete and define the existing results. It was attempted to solve the following problems mathematically and by means of diagrams in a demonstrative manner: (1) The course of the isothermal-isobaric lines for the coexistence of two liquid phases in the three-component system (Fig 1); (2) The grouping of the nodes in the concentration diagram (Fig 2). The results of investi-

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On the Equilibrium "Liquid - Liquid" in Three-
component Systems

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gation offered the following rule: if the content of one of the components of the three-component system is equal in the coexistent phases, the chemical potentials of the two other components change by equal values as they move along the isothermal isobar of the coexistent phases. V. F. Alekseyev's rule for binary systems holds also near the critical point of the ternary system. There are 2 figures and 13 references, 11 of which are Soviet.

ASSOCIATION: Leningradskiy gosudarstvennyy universitet (Leningrad State University)

SUBMITTED: July 14, 1958

Card 2/2

30V/76-31-2-7/45

Author: Markuzin, A. V., Markuzin, N. I.

Title: The Shape of the Isotherm for the Separation of the Ternary Solution Triethylamine-phenol-Water at 15 and 35°C (O forme razdeleniya troynogo rastvora trietilamin-fenol-voda pri 15 i 35°C)

Source: Zhurnal fizicheskoy khimii, 1959, Vol. 33, Nr 2, pp. 379-387 (USSR)

Summary: It has previously been shown (Refs 1,2) that a definite relationship exists between the shape of the solubility isotherm of ternary systems and the size of the phase effect, which characterizes the effect of the change in composition of the solution (according to the nodes) upon the chemical potential of the components. Commenting on the data of D. L. L. (Dagbl.) (Ref 4) Frenkel states that the appearance of an S-shaped isotherm can be attributed to the separation of ternary solutions into impurities. According to the data of L. L. L. (Ref 5) the binodes of the system mentioned in the title possess S-shaped sections and these were investigated in the work reported here. The concentration of the

of the Isotherm for the Separation of the
 triethylamine-phenol-water at 15 and 35°C 307/71-2-7/45

triethylamine was determined by a titration method of
 Koppeschaar (Koppeschaar)(Ref 6) and from this the phenol was
 found. The method of the partial pressures of the components
 was previously described (Ref 7). The results of the deter-
 mination of the liquid-liquid equilibria for the system
 $(C_2H_5)_3N-C_6H_5OH-H_2O$ at 15 and 35° C are tabulated (Tables 1,2),
 as are the values for the partial and total pressures of the
 homogeneous solutions of this system (Tables 3,4). On the
 basis of three theories of the phase effect (Ref 3) the
 S-shaped portion of the separation isotherm for 15° C (Fig 2)
 is explained, and it is found that the reason for it is not
 the mixtures present, but the particular properties of the
 reactions of the components of the solution. This reason holds
 for the isotherms at 35° C also (Fig 3)(Table 4). There are
 2 figures, 1 table, and 11 references, 5 of which are Soviet.
 Leningradskiy gosud. razvnyy universitet im. A. A. Zhdanov
 (Leningrad State University im. A. A. Zhdanov)
 June 15, 1957

100-11-11
 100-11-11
 100-11-11

5(4)

SOV/76-33-1-12/41

AUTHORS:

Storonkin, A. V., Markuzin, N. P.

TITLE:

Investigation of the Total and Partial Vapor Pressures of the 35°C Separating Ternary Solution: Triethylamine-Phenol-Water at 15 and, (Issledovaniye obshchego i partial'nykh davleniy para komponentov troynogo rasslaivayushchegosya rastvora trietilamin-fenol-voda pri 15° i 35°C)

PERIODICAL:

Zhurnal fizicheskoy khimii, 1950, Vol 33, Nr 3, pp 581 - 588 (US L)

ABSTRACT:

Experimental results are given concerning the investigations of the equilibrium liquid - liquid - vapor in the system $(C_2H_5)_3N-C_6H_5OH-H_2O$ at 15 and 35°. The results were explained on the basis of a certain consideration of the three--phase equilibrium. The experimental technique was already described (Ref 5). The experimental results obtained (Table 1, Fig 1) show that the values of the partial pressure of water are in several cases higher than the steam pressure of pure water which fact is considered to be due to the formation of vaporous triethylamine compound with water (Ref 6). In connection

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Investigation of the Total and Partial Vapor Pressures of SOV/76-33-12/41
the Separating Ternary Solution of Triethylamine-phenol-Water at 15 and 35°C

with the increase of the molar ratio of $(C_2H_5)_3N$ it is found that its partial pressure is bound to rise constantly in the water-phase, while the partial pressure of C_6H_5OH is bound to fall. To begin with, the partial pressure of water will increase in this case, then fall until a certain point is reached and then remain constant. The experimental data achieved are in good qualitative agreement with the given descriptions. There are 5 figures, 2 tables and 6 Soviet references.

ASSOCIATION: Leningradskiy gosudarstvennyy universitet im. A. A. Zhdanova
(Leningrad State University imeni A. A. Zhdanov)

SUBMITTED: June 25, 1957

Card 2/2

MENDELEYEV, Dmitriy Ivanovich; DOBROTIN, R.B., kand.khim.nauk; KRAVCHENKO, M.G. [translator]; KUPRIYANOVA, V.R. [translator]; STOROMKIN, A.V., prof., otv.red.; ZAYCHIK, N.K., red.isd-vo; BLEYKH, E.Yu., tekhn. red.

[Scientific archives. Solutions] Nauchnyi arkhiv. Rastvory.
Moskva, Izd-vo Akad.nauk SSSR, 1960. 179 p. (MIRA 13:8)
(Solution (Chemistry))

STORONKIN, A.V.

Results of discussing certain thermodynamic conclusions made by
D.S. Korzhinskii. Geokhimiia no.3:282-283 '60. (MIRA 14:5)
(Thermodynamics)

SMIRNOVA, N.A.; MORACHEVSKIY, A.G.; STORONKIN, A.V.

Effect of temperature and pressure changes on the composition
of ternary heteroazeotropes. Vent.LGU 15 no.10:72-79 '60.
(MIRA 13:5)

(Thermodynamics) (Azeotropes)

STORONKIN, A.V.; MUSANOV, A.I.

Thermodynamic theory of critical phenomena in three-component systems.
Part 1. Zhur. fiz. khim. 34 no.3:530-536 Mr '60. (MIRA 13:11)

1. Leningradskiy gosudarstvennyy universitet imeni A.A.Zhdanova.
(Systems (Chemistry)) (Thermodynamics)

STORONKIN, A.V.; RUSANOV, A.I. (Leningrad)

Thermodynamic theory of critical phenomena in three-component systems. Part 2: Shape of the isotherm and isobar curve for the coexistence of two phases in the vicinity of the critical point. Zhur. fiz. khim. 34 no.4:749-753 Ap '60. (MIRA 14:5)

1. Leningradskiy gosudarstvennyy universitet imeni A.A. Zhdanova.
(Phase rule and equilibrium) (Systems (Chemistry))

S/076/60/034/05/06/038
B010/B002

AUTHORS: Storonkin, A. V., Rusanov, A. I.
TITLE: Thermodynamic Theory of Critical Phenomena in Ternary
Systems. III. On the Shape of the Cusp in the Critical
Point of a Ternary System
PERIODICAL: Zhurnal fizicheskoy khimii, 1960, Vol. 34, No. 5,
pp. 977-982

TEXT: An investigation of the shape of cusps allows the derivation of thermodynamic inequalities determining the type of the critical point, while a comparison of the "coexistence" curve and the cusp yields important information on the metastable and unstable field near the critical point. In this manner, ternary systems were studied in the present case. Explanations are given in the following sections: shape of the isothermal-isobaric cusp in the critical point of a ternary system; shape of the isobaric cusp in the critical point of a ternary system; shape of the isothermal cusp of a ternary system. The inequalities derived characterize the possible relations between the unstable and meta-

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Thermodynamic Theory of Critical Phenomena
in Ternary Systems. III. On the Shape
of the Cusp in the Critical Point of a
Ternary System

S/076/60/034/05/06/039
3010/3002

stable fields near the critical point of a ternary system. There are
1 figure and 3 references: 2 Soviet and 1 German. ✓

ASSOCIATION: Leningradskiy gosudarstvennyy universitet im. A. A. Zhdanova
(Leningrad State University imeni A. A. Zhdanov)

SUBMITTED: June 2, 1958

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STORONKIN, A.V.; HUSANOV, A.I. (Leningrad)

Thermodynamic theory of critical phenomena in three-component systems. Part 4: Critical curves of a three-component system. Zhur.fiz.khim. 34 no.6:1212-1218
Ja '60. (MIRA 13:7)

1. Leningradskiy gosudarstvennyy universitet imeni A.A. Zhdanova.

(Systems(Chemistry))

STORONKIN, A.V.; RUSALOV, A.I.

Thermodynamic theory of critical phenomena in three-component systems. Part 5. Zhur.fiz.khim. 34 no.7:1407-1413
J1 '60. (MIRA 13:7)

1. Leningradskiy gosudarstvennyy universitet im. A.A. Zhdanova.
(Phase rule and equilibrium) (Thermodynamics)

S/OTD/60/034/007/016/042/XX
B004/7069

AUTHOR: Storonkin, A. V.
TITLE: On the Paper by D. S. Korzhinskiy "Extremal States in
Systems With Fully Mobile Components"
PERIODICAL: Zhurnal fizicheskoy khimii, 1960, Vol. 34, No. 7.
pp. 1643 - 1644

TEXT: A paper by D. S. Korzhinskiy (Ref.1) who states that the monograph of the author "On the Conditions of Thermodynamic Equilibrium in Multicomponent Systems" (Ref.2) deals chiefly with the problems of extreme pressure and temperature. is discussed by the author. He corrects that only one chapter, comprising 14 pages from 120, is devoted to this problem. Moreover, the assertion is disproved that this problem had been investigated by Gibbs and D. P. Kononov for two-component systems exclusively. In addition, references to papers published by the author jointly with M. M. Shul'ts (Refs.7,8) on extreme chemical potentials of heterogeneous systems are lacking in the paper of Korzhinskiy.

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On the Paper by D. S. Korzhinskiy
"Extremal States in Systems With Fully
Mobile Components"

S/076/60/034/007/036/042/XX
B004/B068

There are 12 references: 11 Soviet and 1 British.

ASSOCIATION: Leningradskiy gosudarstvennyy universitet im.
A. A. Zhdanova (Leningrad State University imeni
A. A. Zhdanov)

SUBMITTED: December 26, 1958

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8/26/00 10:11:00 10:11:00 XX

5.4210(1273, 1320, 1160)

AUTHORS: Storonkin, A. V. and Rusanov, A. I.

TITLE: Thermodynamic Theory of Critical Phenomena in Three-component Systems. II. Equilibrium of Heterogeneous Systems Containing a Critical Phase

PERIODICAL: Zhurnal fizicheskoy khimii, 1960, Vol. 34, No. 7, pp. 1407-1413

X

TEXT: The authors start from the fact that the direct experimental investigation of the properties of a critical phase is sometimes impracticable. In this case, an indirect method which is based on the study of the phases coexisting with the critical one may be used to study the critical state. In this paper, the general method of describing binary phase equilibria with a critical phase being present is treated. Moreover, some cases of such equilibria in ternary systems are investigated. The coexisting phases bear the indices 1 and 2, and the generalized van der Waals differential equation is written using the variables of the first phase:

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Thermodynamic Theory of Critical Phenomena
in Three-component Systems. V. Equilibrium
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Phase

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1041/0060

$$v_{12}^{(1)} - v_{12}^{(2)} = \sum_{i=1}^{n-1} \sum_{k=1}^{n-1} (x_i^{(2)} - x_i^{(1)}) \xi_{ik}^{(1)} x_k^{(1)} \quad (1), \text{ where}$$

$$\eta_{12} = \eta^{(2)} - \eta^{(1)} = \sum_{i=1}^{n-1} (x_i^{(2)} - x_i^{(1)}) (\partial \eta / \partial x_i)^{(1)};$$

$$v_{12} \equiv v^{(2)} - v^{(1)} = \sum_{i=1}^{n-1} (x_i^{(2)} - x_i^{(1)}) (\partial v / \partial x_i)^{(1)}, \text{ where } v \text{ is the molar volume;}$$

η is the molar entropy; x_i is the molar portion of the i -th component;

ξ is the molar thermodynamic Gibbs potential; $\xi_{ik} \equiv (\partial^2 \xi / \partial x_i \partial x_k)_{P,T}$;

P is the pressure; T is the temperature; n is the number of components.

In addition, it holds that $1(\partial \xi / \partial x_i)^{(1)} = 1(\partial \xi / \partial x_i)^{(2)}$, ($i = 1, 2, \dots, n-1$)

(2). Equations (1) and (2) result from the equilibrium conditions:

$$T^{(1)} = T^{(2)}, P^{(1)} = P^{(2)}, d\mu_i^{(1)} = d\mu_i^{(2)}; (i = 1, 2, \dots, n) \quad (3).$$

μ_i is the chemical potential of the i -th component. By substituting index k of

Thermodynamic Theory of Critical Phenomena in
in Three-component Systems. V. Equilibrium
of Heterogeneous Systems Containing a Critical
Phase

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the critical phase for index 2 in equations (1) and (2), a set of equations is obtained

$$\begin{aligned} \eta_{1n}dT - v_{1n}dP + \sum_{i=1}^{n-1} \sum_{j=1}^{n-1} (x_i^{(n)} - x_i^{(j)}) \epsilon_{ij}^{(1)} dx_j^{(1)} &= 0; \\ \left(\frac{\partial U_{n-1}}{\partial T} \right)^{(n)} dT + \left(\frac{\partial U_{n-1}}{\partial P} \right)^{(n)} dP + \sum_{i=1}^{n-1} \left(\frac{\partial U_{n-1}}{\partial x_i} \right)^{(n)} dx_i^{(n)} &= 0; \\ \left(\frac{\partial V_{n-1}}{\partial T} \right)^{(n)} dT + \left(\frac{\partial V_{n-1}}{\partial P} \right)^{(n)} dP + \sum_{i=1}^{n-1} \left(\frac{\partial V_{n-1}}{\partial x_i} \right)^{(n)} dx_i^{(n)} &= 0; \\ d \left(\frac{\partial \epsilon}{\partial x_i} \right)^{(1)} = d \left(\frac{\partial \epsilon}{\partial x_i} \right)^{(n)} & \quad (i = 1, 2, \dots, n-1). \end{aligned}$$

(6)

A set of $n+2$ equations (6) sufficiently characterizes the two-phase equilibrium in a system containing a critical phase. For the coexistence of one critical with two non-critical phases in a ternary system, it is assumed that the critical phase contains all three components of the system. Equation (8) is derived:

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Thermodynamic Theory of Critical Phenomena
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of Heterogeneous Systems Containing a Critical
Phase

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$$\left. \begin{aligned} r_{n1}dT - r_{n1}dP + \varphi_1^{(n)}dx_1^{(n)} + \varphi_2^{(n)}dx_2^{(n)} &= 0, \\ \left(\frac{\partial U_1}{\partial T}\right)^{(n)}dT + \left(\frac{\partial U_1}{\partial P}\right)^{(n)}dP + \left(\frac{\partial U_1}{\partial x_1}\right)^{(n)}dx_1^{(n)} + \left(\frac{\partial U_1}{\partial x_2}\right)^{(n)}dx_2^{(n)} &= 0, \\ \left(\frac{\partial V_1}{\partial T}\right)^{(n)}dT + \left(\frac{\partial V_1}{\partial P}\right)^{(n)}dP + \left(\frac{\partial V_1}{\partial x_1}\right)^{(n)}dx_1^{(n)} + \left(\frac{\partial V_1}{\partial x_2}\right)^{(n)}dx_2^{(n)} &= 0, \end{aligned} \right\} \quad (8)$$

where

$$\begin{aligned} \varphi_1^{(n)} &= \zeta_{11}^{(n)}(x_1^{(1)} - x_1^{(n)}) + \zeta_{12}^{(n)}(x_2^{(1)} - x_2^{(n)}), \\ \varphi_2^{(n)} &= \zeta_{12}^{(n)}(x_1^{(1)} - x_1^{(n)}) + \zeta_{22}^{(n)}(x_2^{(1)} - x_2^{(n)}). \end{aligned}$$

Solving system (8) with respect to the derivatives $(dT/dx_1)_{\text{coexist}}$, $(dP/dx_1)_{\text{coexist}}$, and $(dx_2/dx_1)_{\text{coexist}}$, one obtains:

$$\left(\frac{dT}{dx_1} \right)_{\text{coexist}} = - \frac{\begin{vmatrix} \varphi_1^{(n)} & -r_{n1} & \varphi_2^{(n)} \\ \left(\frac{\partial U_1}{\partial x_1}\right)^{(n)} & \left(\frac{\partial U_1}{\partial P}\right)^{(n)} & \left(\frac{\partial U_1}{\partial x_2}\right)^{(n)} \\ \left(\frac{\partial V_1}{\partial x_1}\right)^{(n)} & \left(\frac{\partial V_1}{\partial P}\right)^{(n)} & \left(\frac{\partial V_1}{\partial x_2}\right)^{(n)} \end{vmatrix}}{\Delta_3^{(n)}}; \quad (9)$$

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Thermodynamic Theory of Critical Phenomena
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$$\left(\frac{dP}{dx_1}\right)_{\text{coex}} = - \frac{\begin{vmatrix} r_{n1}, & \bar{r}_{n1}, & \bar{r}_2^{(n)} \\ \left(\frac{\partial U_1}{\partial T}\right)^{(n)}, & \left(\frac{\partial U_1}{\partial x_1}\right)^{(n)}, & \left(\frac{\partial U_1}{\partial x_2}\right)^{(n)} \\ \left(\frac{\partial V_1}{\partial T}\right)^{(n)}, & \left(\frac{\partial V_1}{\partial x_1}\right)^{(n)}, & \left(\frac{\partial V_1}{\partial x_2}\right)^{(n)} \end{vmatrix}}{\Delta_3^{(n)}}; \quad (10)$$

$$\left(\frac{dx_2}{dx_1}\right)_{\text{coex}} = - \frac{\begin{vmatrix} r_{n1}, & -r_{n1}, & \bar{r}_2^{(n)} \\ \left(\frac{\partial U_1}{\partial T}\right)^{(n)}, & \left(\frac{\partial U_1}{\partial P}\right)^{(n)}, & \left(\frac{\partial U_1}{\partial x_1}\right)^{(n)} \\ \left(\frac{\partial V_1}{\partial T}\right)^{(n)}, & \left(\frac{\partial V_1}{\partial P}\right)^{(n)}, & \left(\frac{\partial V_1}{\partial x_1}\right)^{(n)} \end{vmatrix}}{\Delta_3^{(n)}}; \quad (11)$$

$$\Delta_3^{(n)} \equiv \begin{vmatrix} r_{n1}, & -r_{n1}, & \bar{r}_2^{(n)} \\ \left(\frac{\partial U_1}{\partial T}\right)^{(n)}, & \left(\frac{\partial U_1}{\partial P}\right)^{(n)}, & \left(\frac{\partial U_1}{\partial x_1}\right)^{(n)} \\ \left(\frac{\partial V_1}{\partial T}\right)^{(n)}, & \left(\frac{\partial V_1}{\partial P}\right)^{(n)}, & \left(\frac{\partial V_1}{\partial x_1}\right)^{(n)} \end{vmatrix}.$$

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Thermodynamic Theory of Critical Phenomena
in Three-component Systems. V. Equilibrium
of Heterogeneous Systems Containing a Critical
Phase

S/076/69/034/007/012/042/XX
2004/2068

If the critical phase contains only two components of the system, one obtains:

$$\left. \begin{aligned} r_{1n}dT - v_{1n}dP + \bar{r}_1^{(n)}dx_1^{(n)} + \bar{r}_2^{(n)}dx_2^{(n)} &= 0, \\ -\left(\frac{\partial r}{\partial x_1}\right)^{(n)}dT + \left(\frac{\partial v}{\partial x_1}\right)^{(n)}dP &= 0, \\ -\left(\frac{\partial r}{\partial x_1}\right)^{(n)}dT + \left(\frac{\partial v}{\partial x_1}\right)^{(n)}dP + \left(\frac{\partial r}{\partial x_1}\right)^{(n)}dx_1^{(n)} &= 0, \\ \left[\left(\frac{\partial r}{\partial x_1}\right)^{(n)} - \left(\frac{\partial r}{\partial x_1}\right)^{(1)}\right]dT - \left[\left(\frac{\partial v}{\partial x_1}\right)^{(n)} - \left(\frac{\partial v}{\partial x_1}\right)^{(1)}\right]dP + \zeta_{11}^{(n)}dx_1^{(n)} + \\ &+ \zeta_{12}^{(n)}dx_2^{(n)} = 0. \end{aligned} \right\} \quad (14)$$

where

$$\bar{r}_1^{(n)} \equiv \zeta_{11}^{(n)}(x_1^{(n)} - x_1^{(1)}) - \zeta_{12}^{(n)}x_2^{(n)},$$

$$\bar{r}_2^{(n)} \equiv \zeta_{12}^{(n)}(x_1^{(n)} - x_1^{(1)}) - \zeta_{22}^{(n)}x_2^{(n)},$$

$$r_{1n} \equiv r^{(n)} - r^{(1)} - \left(\frac{\partial r}{\partial x_1}\right)^{(1)}(x_1^{(n)} - x_1^{(1)}) + \left(\frac{\partial r}{\partial x_2}\right)^{(1)}x_2^{(n)},$$

$$v_{1n} \equiv v^{(n)} - v^{(1)} - \left(\frac{\partial v}{\partial x_1}\right)^{(1)}(x_1^{(n)} - x_1^{(1)}) + \left(\frac{\partial v}{\partial x_2}\right)^{(1)}x_2^{(n)}.$$

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Thermodynamic Theory of Critical Phenomena
in Three-component Systems. V. L. Spil'berg
of Heterogeneous Systems Containing a Critical
Phase

J. Chem. Phys. 47:1270-1275 (1967)

The following conclusion is drawn which is important for practical purposes:
The investigation of the critical state of a binary phase with a coexist-
ing third phase leads to the same result as the investigation of a binary
phase alone. There are 5 Soviet references.

ASSOCIATION: Lenin State Gosudarstvennyy universitet im. A. A.
Zhukovskiy
(Moscow State University imeni A. A. Zhukovskiy)

SUBMITTED: July 1, 1967

Carl 7/7

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S/076/60/034/008/002/0'4
B015/B054

AUTHORS: Storonkin, A. V. and Rusanov, A. I. (Leningrad)

TITLE: Thermodynamic Theory²¹ of Critical Phenomena in Three-
component Systems. VI. Critical End Points of Ternary
Systems

PERIODICAL: Zhurnal fizicheskoy khimii, 1960, Vol. 34, No. 8.
pp. 1677-1683

TEXT: The authors investigated the critical end points of ternary three-
phase systems by calculating the isothermal and isobaric lines of the
three-phase equilibrium. They discuss the extreme temperatures and
pressures at the critical end point. On the basis of the equations (16)
and (27) obtained, they derive an important final equation (28) which
shows that, in the case of an extreme pressure and temperature at the
critical end point, the isobaric and isothermal lines (for the phases
not attaining the critical state) are touching at the critical end point
on the concentration diagram of the three-phase equilibrium. There are

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Thermodynamic Theory of Critical Phenomena
in Three-component Systems. VI. Critical
End Points of Ternary Systems

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B015/B054

1 figure and 4 Soviet references.

ASSOCIATION: Leningradskiy gosudarstvennyy universitet im. A. A.
Zhdanova (Leningrad State University imeni A. A. Zhdanov)

SUBMITTED: July 9, 1958

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Card 2/2

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5/27/73/034/009/001, 012
10/5/80/4

AUTHORS: Storozhenko, A. V. and Shul'gin, M. M.

TITLE: S. M. Problems of the Thermodynamics of Heterogeneous
Systems. II. The Necessary Condition for
the Stability of Heterogeneous Systems.

PERIODICAL: Journal fizicheskoy khimii., 1970, Vol. 34, No. 2,
pp. 1228-1232

TEXT: The present article deals with the generally necessary conditions for a stability of heterogeneous systems with respect to continuous changes in state. The author proceeds from the Gibbs' inequality

$$dTd\eta + PdV + \sum_{i=1}^n \mu_i d\bar{m}_i + \dots + \mu_n d\bar{m}_n > 0 \quad (1)$$

($T, P, \mu_1, \dots, \mu_n$ - temperature, pressure, and chemical potentials (i.e., the intensive properties) and $\eta, V, \bar{m}_1, \dots, \bar{m}_n$ - entropy, volume and mass of the components (the extensive properties) in order then to refer the interrelation between the changes in intensive and extensive parameters

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Some Problems of the Thermodynamics of Heterogeneous Multicomponent Systems. II. The Necessary Conditions for the Stability of Heterogeneous Systems

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... the heterogeneous system as a whole. The heterogeneous system will then, as a whole, be in the state of stable equilibrium, when all its existing phases are stable with respect to continuous changes of state. Thus, the inequality (1) must hold for every phase in stable equilibrium. It is found that under certain conditions, the conjugate intensive and extensive parameters of a heterogeneous system always change in the same direction, with the exception of pressure and volume, which always change in the opposite direction. On the basis of the inequality

$$\left(\frac{d\mu_i}{dn_i} \right)_{T,p,m_1,\dots,m_{i-1},m_{i+1},\dots,m_n} > 0 \quad (1') \text{ derived, the con-}$$

clusion is drawn that an isothermal-isobaric change in the total content of a given component of the heterogeneous system is accompanied by a change in the chemical potential of this component proceeding in the same way, provided the total content of each of the other components remains constant, and that the phase composition changes during the process is neglected. If the total composition of the heterogeneous system is

fixed...

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Some Problems in the Theory of Heterogeneous Multicomponent Systems. II. The Necessary Conditions for the Stability of Heterogeneous Systems

expressed by the molar fractions (x_i) of the components, the following inequality may be derived:

$$\left(\frac{dx_i}{dx_j}\right)_{T,P} \frac{x_i}{x_j} \geq \frac{x_i}{x_j} \frac{dx_i}{dx_j} \geq \frac{x_i}{x_j} \frac{dx_i}{dx_j} \geq 0 \quad (13)$$

Like in the case of the inequality (12), an inequality (13) may be written down for a homogeneous body or a phase of the heterogeneous system, which represents the interrelation between the changes of the chemical potentials and the molar fractions of the components of a homogeneous body or of a phase of a heterogeneous system. In the next report it is intended to be shown that the problem of the interrelation between the changes of chemical potentials of the components and the compositions of the coexisting phases can be solved with the aid of the inequalities (7) or (12). There are 7 Soviet references.

ASSOCIATION: Leningradskiy gosudarstvennyy universitet im. A. A. Zhukova (Leningrad State University, named after A. A. Zhukov)

SUBMITTED: November 11, 1969
Card 3/3

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S/076/60/034/010/003/022
B015/B064

S. 4210 2169, 1273 and 7

AUTHORS: Storonkin A. V. and Shul'ta. M. M.

TITLE: Some Problems of the Thermodynamics of Heterogeneous Multicomponent Systems. III. The Relation Between the Changes of the Chemical Potentials of the Components and the Isothermal-isobaric Changes of the Phase Composition

PERIODICAL Zhurnal fizicheskoy khimii. 1960. Vol. 34. No. 10. pp 2167-2173

TEXT: Proceeding from ternary two-phase systems, the authors study the changes of the chemical potential and the partial pressures of the components at an isothermal-isobaric change of the composition of heterogeneous multi-component systems and formulate the conditions for the extremum of these criteria. Already deduced conditions studied by D. S. Korzhinskiy (Ref. 3) as well as equations derived by the authors (Refs 2,4) are the basis of discussions of the present investigation

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Some Problems of the Thermodynamics of
Heterogeneous Multicomponent Systems.
III. The Relation Between the Changes of
the Chemical Potentials of the Components
and the Isothermal isobaric Changes of the
Phase Composition

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B015/B064

$$\left(\frac{d\mu_i}{dx_i} \right)_{P,T,x_k/x_i} = 0 \quad (1)$$

(x_1, x_k, x_l = total molar ratios characterizing the composition of the heterogeneous system as a whole) Equation (1) holds for a ternary two-phase system saying that the chemical potential of a given component and its total molar ratio change always simultaneously in the ternary two-phase system if temperature, pressure, and the molar ratio of the two other components remain constant. In the case of a solution of the Gibbs-Duhem equation for the coexisting phases for the conditions the extremum of the chemical potential of an arbitrary component i the expression

$\left(\frac{d\mu_i}{dx_i} \right)_{P,T} = 0$ is given by: $\frac{x_k^{(1)}}{x_l^{(1)}} = \frac{x_k^{(2)}}{x_l^{(2)}} \quad (2)$; this expression shows

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Some Problems of the Thermodynamics of
Heterogeneous Multicomponent Systems. III.
The Relation Between the Changes of the
Chemical Potentials of the Components and the
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Composition

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B015/B064

that in a change of the composition of ternary two-phase systems along the isothermal-isobaric curve of the phase equilibrium the chemical potential then passes through a maximum when the molar ratio of the two other components in the coexisting phases is equal. A simultaneous application of equations (1) and (3) permits to establish the position and also the kind (maximum or minimum) of the extremum of the chemical potential. The authors emphasize that only a joint analysis of the equilibrium conditions and the stability conditions of heterogeneous systems permits to determine the character of the changes of the chemical potentials along the total length of the isothermal-isobaric curves of composition. If one of the coexisting phases may be regarded as ideal the following holds:

$$\frac{dx_i^{(2)}}{dx_i^{(1)}} \quad P, T, x_{j \neq i}^{(1)} > 0 \quad (4) \text{ which means that the total molar ratio}$$

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Some Problems of the Thermodynamics of
Heterogeneous Multicomponent Systems. III
The Relation Between the Changes of the
Chemical Potentials of the Components and
the Isothermal-isobaric Changes of the
Phase Composition

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B015/B061

of the respective component of the heterogeneous system and its molar ratio
in the ideal phase change in the same sense. For a system with an arbitrary
number of components the following holds:

$$\left(\frac{d\mu_i^{(k)}}{dx_i^{(k)}} \right)_{P,T} \geq 0 \quad \text{if} \quad \left(\frac{dx_i^{(k)}}{dx_1^{(k)}} \right)_{P,T} \frac{x_1}{x_n}, \dots, \frac{x_{i-1}}{x_n}, \frac{x_{i+1}}{x_n}, \dots, \frac{x_{n-1}}{x_n} \geq 0 \quad (1).$$

i.e., the chemical potential (the partial pressure of the i-th component of
the heterogeneous system) and its molar ratio changes in the studied k th
phase in one and the same (in the opposite) direction if an addition of the
corresponding component to the heterogeneous system leads to an increase
(decrease) of its molar ratio in this phase. By solving the Gibbs-Duhem
equation for each of the coexisting phases

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Some Problems of the Thermodynamics of
Heterogeneous Multicomponent Systems.
III. The Relation Between the Changes of
the Chemical Potentials of the Components
and the Isothermal-isobaric Changes of
the Phase Composition

S/076/60/034/010/003/022
B015/B064

$$d\mu_1 = - \frac{\begin{vmatrix} x_n^{(1)} x_2^{(1)} \dots x_{n-1}^{(1)} \\ \dots \dots \dots \\ x_n^{(r)} x_2^{(r)} \dots x_{n-1}^{(r)} \\ \dots \dots \dots \\ x_1^{(1)} x_2^{(1)} \dots x_{n-1}^{(1)} \\ \dots \dots \dots \\ x_1^{(r)} x_2^{(r)} \dots x_{n-1}^{(r)} \end{vmatrix}}{\begin{vmatrix} x_1^{(1)} x_2^{(1)} \dots x_{n-1}^{(1)} \\ \dots \dots \dots \\ x_1^{(r)} x_2^{(r)} \dots x_{n-1}^{(r)} \end{vmatrix}} d\mu_n \quad (8)$$

$$d\mu_{n-1} = - \frac{\begin{vmatrix} x_1^{(1)} \dots x_{n-2}^{(1)} x_n^{(1)} \\ \dots \dots \dots \\ x_1^{(r)} \dots x_{n-2}^{(r)} x_n^{(r)} \\ \dots \dots \dots \\ x_1^{(1)} \dots x_{n-2}^{(1)} x_n^{(1)} \\ \dots \dots \dots \\ x_1^{(r)} \dots x_{n-2}^{(r)} x_n^{(r)} \end{vmatrix}}{\begin{vmatrix} x_1^{(1)} \dots x_{n-2}^{(1)} x_n^{(1)} \\ \dots \dots \dots \\ x_1^{(r)} \dots x_{n-2}^{(r)} x_n^{(r)} \end{vmatrix}} d\mu_n$$

is obtained, so that from (8)
and the stability conditions one
obtains equation (9) for the
conditions of an extremum of the
chemical potential of the i-th
component on the isothermal-
isobaric curves of hetero-
geneous systems, consisting of
n components and n-1 phases:

X

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Some Problems of the Thermodynamics of
Heterogeneous Multicomponent Systems.

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B015/B064

III. The Relation Between the Changes of
the Chemical Potentials of the Components
and the Isothermal-isobaric Changes of
the Phase Composition

$$[d\mu]_{P,T} = 0, \quad \text{сумма} \begin{vmatrix} x_1^{(1)} & \dots & x_{i-1}^{(1)} & x_i^{(1)} & x_{i+1}^{(1)} & \dots & x_{n-1}^{(1)} \\ \dots & \dots & \dots & \dots & \dots & \dots & \dots \\ x_1^{(r)} & \dots & x_{i-1}^{(r)} & x_i^{(r)} & x_{i+1}^{(r)} & \dots & x_{n-1}^{(r)} \end{vmatrix} = 0. \quad (9)$$

The practical importance of equation (8) consists in the fact that from the data on the composition of the coexisting phases and on the changes of the chemical potential of one component only, it is possible to determine the changes of the chemical potentials partial pressures and activities of all other components of a system that is monovariant and heterogeneous under isothermal-isobaric conditions. There are 3 figures and 15 references: 14 Soviet and 1 US.

Card 6/7

91,626

Some Problems of the Thermodynamics of
Heterogeneous Multicomponent Systems.
III The Relation Between the Changes
of the Chemical Potentials of the
Components and the Isothermal-isobaric
Changes of the Phase Composition

S/076/60/034/010/003/022
B015/B064

ASSOCIATION: Leningradskiy gosudarstvennyy universitet im A. A. Zhdanova
(Leningrad State University imeni A. A. Zhdanov)

SUBMITTED: November 15, 1958

Card 7/7

S/054/61/000/001/006/008
B117/B203

AUTHORS: Storonkin, A. V., Markuzin, N. P.

TITLE: Isothermal evaporation of liquid phases in the system
 $(C_2H_5)_3N - C_6H_5OH - H_2O$ at 15 and 35°C

PERIODICAL: Vestnik Leningradskogo universiteta. Seriya fiziki i
khimii, no. 1, 1961, 75-86

TEXT: The authors studied the isothermal evaporation of liquid phases in the system $(C_2H_5)_3N - C_6H_5OH - H_2O$ with the aid of equations derived earlier (Ref. 1: A. V. Storonkin, ZhFKh, 32, 2347, 1958; Ref. 2: A. V. Storonkin, ZhFKh, 28, 2021, 1954). The following was stated: If the system is in the non-critical state the total vapor pressure during open evaporation of ternary solutions separating into layers decreases, irrespective of the phase transitions involved ($dP < 0$). If the open evaporation of the first phase ($m^{(2)} = 0, m^{(3)} = 0, dP < 0$) proceeds according to the phase process (19) $L_1 \rightarrow L_2 + v(dm^{(1)} < 0, dm^{(2)} > 0)$, then $D < 0$ and

Card 1/4

9/054/61/000/001/006/008
B117/B203

Isothermal evaporation of liquid...

$B > 0$; but if it proceeds according to the phase process (20)
 $L_1 \rightarrow v(dm^{(1)} < 0, dm^{(2)} = 0)$, then $D < 0$ and $B = 0$. Hence, if the evapora-
 tion of the second phase ($m^{(1)} = 0, m^{(3)} = 0, dP < 0$) proceeds according to
 the phase process (21) $L_2 \rightarrow L_1 + v(dm^{(1)} > 0, dm^{(2)} < 0)$, then $A < 0$ and $C > 0$,
 but if it proceeds according to the phase process (22) $L_2 \rightarrow v(dm^{(1)} = 0,$
 $dm^{(2)} < 0)$, then $A = 0$ and $C > 0$. In the formulas given,

$$A = (x_1^{(3)} - x_1^{(2)})(y_1^{(2)} - y_1^{(3)}) - (x_1^{(2)} - x_1^{(1)})(y_1^{(2)} - y_1^{(3)}) = \\ = (x_1^{(2)} - x_1^{(1)})(y_1^{(2)} - y_1^{(3)})(\lg \beta - \lg \gamma); \quad (23)$$

$$B = (x_1^{(1)} - x_1^{(2)})(y_1^{(2)} - y_1^{(3)}) - (x_1^{(2)} - x_1^{(1)})(y_1^{(1)} - y_1^{(3)}) = \\ = (x_1^{(1)} - x_1^{(2)})(y_1^{(2)} - y_1^{(3)})(\lg \alpha - \lg \epsilon); \quad (24)$$

$$C = (x_1^{(1)} - x_1^{(3)})(y_1^{(2)} - y_1^{(3)}) - (x_1^{(2)} - x_1^{(1)})(y_1^{(2)} - y_1^{(3)}) = \\ = (x_1^{(1)} - x_1^{(2)})(y_1^{(2)} - y_1^{(3)})(\lg \alpha - \lg \gamma); \quad (25)$$

$$D = (x_1^{(2)} - x_1^{(3)})(y_1^{(1)} - y_1^{(3)}) - (x_1^{(2)} - x_1^{(1)})(y_1^{(1)} - y_1^{(3)}) = \\ = (x_1^{(2)} - x_1^{(1)})(y_1^{(1)} - y_1^{(3)})(\lg \beta - \lg \epsilon); \quad (26)$$

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S/054/61/000/001/006/009
B117/B203

Isothermal evaporation of liquid...

L_1 and L_2 - symbols for liquid phases; v - symbol for vapor, α - angle of inclination of the node vL_1 ; β - angle of inclination of the node vL_2 ; γ - angle of inclination of the tangent on the branch of the separation isotherm corresponding to the second phase; ξ - angle of inclination of the tangent on the branch of the binodal curve corresponding to the first phase. The angles α , β , γ , and ξ are shown in Fig. 1. Formulas (19)-(22) show that the isothermal evaporation of liquid phases can be predicted by determining the signs of A , B , C , and D on the basis of data with respect to the coexistent phases and the relations (23)-(26). The signs of A , B , C , and D can be written down as follows (on the basis of investigations carried out):

на участке Qx	$A > 0, C < 0$.	в точке N	$B = 0, D < 0$.
в точке x	$A > 0, C = 0$.	на участке xP	$B > 0, D < 0$.
на участке xT	$A > 0, C > 0$.	в точке P	$B = 0, D < 0$.
в точке T	$A = 0, C > 0$.	на участке PW	$B < 0, D < 0$.
на участке TK	$A < 0, C > 0$.	в точке W	$B = 0, D < 0$.
на участке RN	$A < 0, D < 0$.	на участке WK	$B > 0, D < 0$.

(41)

✓

Card 3/4

Isothermal evaporation of liquid....

S/054/61/000/001/006/009
B117/B203

The formulas (19)-(22) comprise all possible cases of evaporation of liquid phases if the three-phase equilibrium is not disturbed. If the experimental data do not correspond to these formulas, this proves that one of the phases will disappear during isothermal evaporation. The authors state that the lines of open evaporation of homogeneous solutions must begin at the point z and end at the vertex of the Gibbs triangle which corresponds to phenol. Besides, they must round the vertices corresponding to triethylamine and water. Figs. 5 and 6 schematically show the course of open evaporation curves in the system investigated at 15°C, and Figs. 9 and 10 at 35°C. There are 10 figures and 5 references: 3 Soviet-bloc and 2 non-Soviet-bloc.

Card 4/7/

STORONKIN, A.V.; MARKUZIN, N.P.

Isothermal evaporation of the liquid phases in the system
(C_2H_5)₃N - $\text{C}_6\text{H}_5\text{OH}$ - H_2O at 135 C. Vest. LGU 16 no.4:75-86
'61. (MIRA 14:3)
(Phase rule and equilibrium)
(Evaporation)

BELOUSOV, V.P.; M-RACHEVSKIY, A.G.; STOLNINKIN, A.V.

Heat of mixing liquids. Part 3: Heat of mixing for ternary systems.
Experimental study of heats of mixing in the ternary system n-propyl
alcohol - n-propyl acetate - water. Vest. LGU 17 no.4:96-105 '62.
(MIRA 15:3)

(Propyl alcohol)(Acetic acid)(Heat of mixing)

Investigate properties of the system $\text{NaCl} - \text{PbCl}_2$.
Part II: Melting diagram and coexisting phases.
V. L. 191-12 (chlorides) (MIRA 10:8)
(System. (Chemistry)) (Melting points) (Chlorides)

STROGANIN, A.D.: Zh. fiz. khim., N.M., 1963, 37, 10, 1711.

Chemical potentials and activity coefficients of the components
of binary solid solutions. Vest. LGU 18 no.10:41-45 '63.
(Solutions, Solid) (Activity coefficients) (MIRA 16:8)

NAZAROV, A.A.; SHUL'TS, M.M.; MORONKIN, A.V.

Thermodynamic properties of the system $\text{AgCl} - \text{NaCl} - \text{PbCl}_2$.
Part 2: Activities and activity coefficients of components
of a system for the solid phase of variable composition.
Vest. LGU. 18 no.16:94-102 '63. (MIRA 16:11)

SMIRNOVA, N.A.; MORACHEVSKIY, A.G.; STORONKIN, A.V.

Liquid - vapor and liquid - liquid - vapor equilibria in
the system n-propyl alcohol - n-propyl acetate - water.
Vest. LGU 18 no.22:97-104 '63. (MIRA 17:1)

OTDUBA, A. V.; OLEDOVA, N. A.

Certain problems of the thermodynamics of multicomponent heterogeneous systems. Part 6. Zhur. fiz. khim 37 no. 3:601-607
Mar '63. (MIRA 17:5)

1. Leningradskiy gosudarstvennyy universitet.

THE UNIVERSITY OF CHICAGO LIBRARY

Contains problems in the thermodynamics of multicomponent
heterogeneous systems. Part 5. Effect of temperature and pressure
on the equilibrium of dissolving solutions and vapor. Zhur, Iiz.
Izv. AN SSSR, 1973, 1213-56. 63s. (MIRA 16:7)

2. London University School of Chemistry (University of London)
(Special Chemistry)
(Physical and Equilibrium)

STORONKIN, A.V.; MARKUZIN, N.P.

Change in vapor composition during isothermal change in the
composition of demixing solutions. Zhur. fiz khim. 37 no.6:
1385-1388 Je '63. (MIRA 16:7)

1. Leningradskiy gosudarstvennyy universitet.
(Vapors) (Chemistry, Physical and theoretical)

STORONKIN, A.V.; LADUNOV, M.D.; PROKH'YZOVA, I.V.

Aqueous solutions of strong electrolytes. Part 1. Zhur. fiz.
khim. 38 no.2:509-511 P '62. (MIRA 17:8)

1. Leningradskiy gosudarstvennyy universitet.

1. 10236441 EWT(0)/EWT(5)/EWT(1)/EWT(6)

UR/0000/64/000/000/0053/0071

ACCESSION NR: AT5009795

AUTHOR: Storonkin, A.V. ; Bobrov, V.S.

AUTHOR: Storonkin, A.V.; Bobrov, V.S.
TITLE: Study of the vapor pressure of aluminoborophosphate glass melts. Report No. 1.
Technique employed and experimental data

SOURCE: Leningrad. Universitet. Fiziko-khimicheskiye svoystvy rastvorov (physico-chemical properties of solutions). Leningrad, Izd-vo Leningr. univ., 1964, 53-71

TOPIC TAGS: glass vapor pressure, aluminoboro phosphate glass, phosphorus pentoxide, boron trioxide

ABSTRACT: The object of this study was to obtain data on the melt - vapor equilibrium in the system $P_2O_5 - Al_2O_3 - B_2O_3$ for a wide range of compositions. Colorimetric methods were used for the analysis of the components - B_2O_3 , P_2O_5 , SiO_2 , and Al_2O_3 . The results obtained were in good agreement with those obtained by classical analytical methods. The vapor pressure of P_4O_{10} and B_2O_3 was determined by using a stream of air. Since the process was nonstationary, only the initial vapor pressure (at zero volume of air passed) corresponded to the unchanged composition of the glass and gave a value close to the equilibrium value; for this reason, the vapor pressures were extrapolated to zero air velocity. The experimental data were compared with the synthetic data on a triangular

Card 1/2

1 21-25-55

ACCESSION NR: AT5009795

composition diagram. It was shown that the log of the partial pressure of P_4O_{10} varies linearly with the composition of the glass in sections containing a constant amount of Al_2O_3 . The temperature dependence of the nonequilibrium partial pressure of P_4O_{10} and B_2O_3 was studied in several glass compositions of the system $P_2O_5 - Al_2O_3 - B_2O_3$. Orig. art. has: 4 figures and 8 tables.

ASSOCIATION: none

SUBMITTED: 09Jan63 ENCL: 00

SUB CODE: MT, GC

NO REF SOV: 008 OTHER: 009

YMR
Card 2/2

L 47307-55

ACCESSION NR: AT5009796

of the evaporation of the glasses during their melting from the charge was investigated, and it was shown that most of the losses of volatile components occur during the second period of the melting, i.e., are due to the evaporation of the glass itself. Orig. art. has: 10 figures, 1 table, and 14 formulas.

ASSOCIATION: none

SUBMITTED: 20Jun63 ENCL: 00

HUB CODE: MT, TD

NO REF SOV: 007 OTHER: 004

mc
Card 2/2

STOKHOLM, A.7.; BELOUSOV, V.P.

Limitations imposed by the stability conditions on the nature
of the concentration dependence of thermodynamic functions of
mixing. Zhur. fiz. khim. 39 no. 1:174-177 Ja '65
(MIRA 19:1)

1. Leningradskiy gosudarstvennyy universitet imeni A.A. Zhdanova.
Submitted December 12, 1963.

KORCHAGIN, V.V.; STOLONKIN, A.V.; SEUL'IS, M.M.

Thermodynamic properties of the binary solid solution C_3Cl-C_3Br .
Zhur. fiz. khim. 39 no. 1:227-230 Ja '65 (MIRA 1961)

L. Leningradskiy gosudarstvennyy universitet imeni A.A. Zhdanova.
Submitted May 8, 1964.

... ..

... .. of strong electrolytes. Part 2. Abstr. fiz.
... .. (MIRA 18:9)

... .. gosdiznauemyy universitet imeni Zhdanova.

BARABASHCHUK, O.V.; BAKHMUT, P.G. [Bakmut, P.G.]; GUBINA, K.M. [Gubina, K.M.]; DEMYANKO, M.D.; KALITA, S.M.; KARACHEVSKAYA, L.S.; KOM-
DRAT'YEVA, V.I.; KORZACHENKO, M.N.; LITVINOVA, N.M. [Litvinova, N.M.]; SOKOLOVA, M.I.; SPORONSKAYA, O.Y. [Sporonskaya, O.Y.];
TRIMKINA, N.V.; TONKIKH, P., ~~otv. za~~ ~~red.~~ ~~red.~~ OV, S., red.;
KURITSA, G. [Kuritsa, H.], tekhn.red.

[Economy of Drozhobych Province; statistical collection] Narodne
hospodarstvo Drozhobych's'koj oblasti; statystychnyi zbirnyk. Drozhobych,
1958. 158 p. (MIRA 12:11)

1. Drozhobych (Province) Statisticheskoye upravleniye. 2. Statisti-
cheskoye upravleniye Drozhobychskoy oblasti (for all except Tonkikh,
Marchenkov, Kuritsa).

(Drozhobych Province--Statisticheskoye upravleniye)

11

effect of prolonged amputation of feedwater on the operation of the
brass tubes of condensers, turbine ejectors, and water heaters.
Inzhinertek. 13 no.7:13-14. J1 '65.

(MIRA 28:8)

STORONSKIY, V.I., inzh.

Sectional cellulose filter for iron removal from condensates.
Energetik 10 no.10:14-15 0 '62. (MIRA 15:12)
(Filters and filtration) (Feed-water purification)

STORONSKIY, V.I., Inzh

Removal of noncondensing gases from heat exchangers. Ener-
getik 10 no.9:20-21 S 12. (MIRA 17:1)

STOROSHCHUK, Kh.V.

for the study of the noise pattern in apartment houses on nearby local

industries. Orig. 1 sen. 21 no.11:91 N '56. (MLRA 10:2)

(NOISE)

STOROSHCHUK, Kh.V.

Street noise in cities. Vrach.delo supplement '57:110-111 (MIRA 11:3)

1. Kafedra obshchey gigiyeny (sav.-prof. V.Z.Martynyuk) L'vovskogo
meditsinskogo instituta.
(WOV--NOISE)

STOROSHCHUK, Kh.V.

Effective location of noisy industrial enterprises in cities. Vrach.
delo no.8:851-853 Ag '57. (MLRA 10:9)

1. Kafedra obshchey gigiyeny (zav. - prof. V.Z.Martynyuk) L'vovskogo
meditsinskogo instituta
(NOISE) (CITY PLANNING)

STOROSHCHUK, Ks.V.

Sanitary-hygienic evaluation of the location of schools in the city of Lvov, taking urban noise into account. Vrach. delo no.2: 117-120 F '62. (MIRA 15:3)

1. Kafedra obshchey gigiyeny (zav. - prof. V.Z. Martynyuk)
L'vovskogo meditsinskogo instituta.
(LVOV—SCHOOL HYGIENE)
(LVOV—NOISE)

Савицкий, И.А., проф.; МАРТЫНЮК, В.С., проф., ИАНХИО, Л.И., доктор;
ПРОКОПЕНКО, Кн.В.

Methods for determining the carboxyhemoglobin in the blood for
mass studies. Vrach.dela no.10:112-115 C 1962. (MHA 15:10)

1. Кафедра клинической биологии (зав. - проф. В.С.Мартынюк) и
кафедра биохимии (зав. - проф. И.А.Савицкий) Львовского медицин-
ского института.
(CARBOXYHEMOGLOBIN) (BLOOD-ANALYSIS AND CHEMISTRY)

L 31468-66 EAT(1) JTB AD
ACC NR: AP6023127

SOURCE CODE: UR/0240/66/000/001/0044/0048

AUTHOR: Storoshchuk, Kh. V.

ORG: Department of General Hygiene, L'viv Medical Institute (Kafedra obshchey
gigiyony L'vivskogo meditsinskogo instituta)

TITLE: Effect of noise on the nervous system of preschool children

SOURCE: Gigiyona i sanitariya, no. 1, 1966, 44-48

TOPIC TAGS: acoustic biologic effect, reflex activity, light biologic effect, man,
central nervous system, acoustic noise, academic institution

ABSTRACT: Reflexes of preschool children in response to acoustic and
photic stimuli were studied in a classroom exposed to background noise of
65-75 db (conversation, play, street sounds). The latent period of both
sets of reflexes proved to be significantly longer than in "control"
children kept under quieter conditions (40-55 db). This increase in the
latent period plus the greater amount of time needed to solve simple problems
are the result of impairment of the regulatory functions of the CNS due to
noise. The author recommends that school sites and arrangement of classrooms
should be so planned as to ensure a noise level of no more than 40 db. Orig.
art. has: 2 figures and 3 tables. [JPAS]

SUB CODE: 06 / SUBM DATE: 03May65 / ORIG REF: 007

Card 1/1

UDC: 612.821.1.014.45-053.44613.954:613.164

231

AUTHOR: Storoshik, D.A., Foreman-fitter of the blast furnace plant of the "Zaporozhstal" Works.

TITLE: Replacing the double gland packing (Zamena dvoynovo salnikovovo uplotneniya.)

PERIODICAL: "Metallurg" (Metallurgist), 1957, No. 1, pp. 9 - 10, (U.S.S.R.)

ABSTRACT: At Zaporozhstal, the packing of the rotating-distributor gland of furnaces working at high top-pressures is replaced without stopping the furnace. According to the time chart shown in this article, the total replacement time is 110 mins. for 30 of which the top pressure is maintained. A team of 8-10 well-trained fitters is used. Diagrams of the gland arrangement and some special tools used in the replacement are shown.

1 graph, 2 line drawings.

YURZHENKO, A.I.; STOROZH, O.F.

Effect of primary aliphatic alcohols on the sol - coagel
transition temperature of aqueous sodium stearate solutions.
Koll.shur. 22 no.3:376-381 My-Je '60. (MIRA 13:7)

1. L'vovskiy gosudarstvennyy universitet in. I.Franko, Kafedra
fizicheskoy i kolloidnoy khimii.
(Alcohols) (Colloids) (Stearic acid)

307/21-59-1-16/26

5(2)

AUTHORS: Kucher, R.V., Storozh, J.P., and Yurzhenko, A.I.

TITLE: The Viscosity of Water Solutions of Sodium Oleate in the Presence of Some Alcohols (Vyazkost' voanykh rastvorov oleata natriya v prisutstvii nekotorykh spirtov).

PERIODICAL: Dopovidi Akademii nauk Ukrain's'koi RSR, 1959, Nr 1, pp 60-63 (USSR)

ABSTRACT: The water solutions of soaps are usually characterized by means of the so-called first and second critical concentrations of the formation of micelles. It was proved in the described experiment, that apart from the critical micelles concentrations CMC-1 and CMC-2, there exists one intermediate concentration which can be quite accurately determined from the minimum of the concentration curves of a given specific viscosity. Small quantities of alcohols (ethyl,

Card 1/2

SSV/21-59-1-16/26

The Viscosity of Water Solutions of Sodium Oleate in The Presence of Some Alcohols.

n-butyl, isoamyl, ethylen-glycol and Glycerine) in solution lowered the middle critical concentration, and larger quantities raised it. Experiments have confirmed the theoretical data contained in the referred literature, and, therefore, the authors recommend it for guidance. There are 3 graphs and 9 references, 2 of which are Soviet, 2 German, 1 Scandinavian, 2 Japanese, and 2 American.

ASSOCIATION: L'vovskiy gosudarstvennyy universitet im Iv. Franko
(The L'vov State University imeni Ivan Franko)

PRESENTED: July 19, 1958, by A.V. Dumanskiy, Member of the AS UkrSSR

Card 2/2

SOV-69-20-5-5/23

AUTHORS: Yurzhenko, A.I., Storozh, G.P.

TITLE: The Effect of Ethylene Glycol on the Colloid Properties of Aqueous Sodium Oleate Solutions (Vliyeniye etilenglikoliya na kolloidnyye svoystva vodnykh rastvorov oleata natriya)

PERIODICAL: Kolloidnyy zhurnal, 1958, Vol XX, Nr 5, pp 550-555 (USSR)

ABSTRACT: The addition of alcohols, e.g. methyl, ethyl, n-butyl, and isocamyl alcohol, to aqueous sodium oleate solutions, increases the turbidity and viscosity of these solutions. The addition of ethylene glycol to these solutions is investigated in the article. Figure 1 shows that the viscosity of soap solutions increases with the content of ethylene glycol. The curves for the changes of the relative viscosity of 0.1% solutions of sodium oleate, depending on the concentration of ethanol and ethylene glycol, are shown in Figure 2.a. The measurements of the specific electroconductivity are presented in Figure 3. The addition of ethylene glycol reduces the electroconductivity, but at maximal viscosity the electroconductivity reaches a constant value. The turbidity curves of the solutions are given in Figure 5. The turbidity decreases rapidly after addition of alcohols, attains a maximum, and decreases again. This fact is in accordance with the theory that the alcohol causes a dehydration of

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